



JRA-55: update on the OMDP Meeting and ACCESS plans

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COSIMA MEETING HOBART MAY 26th 2016

CSIRO OCEANS AND ATMOSPHERE
www.csiro.au



Overview

- CLIVAR Ocean Model Development Panel (OMDP)
- Coordinated Ocean-ice Reference Experiments (CORE)
- Japanese Meteorological Agency 2nd reanalysis (JRA-55)
- ACCESS plans

CLIVAR Ocean Model Development Panel (OMDP)

- OMDP: 2 Co-chairs, 12 members, +6 Ex-officio = 20

<http://www.clivar.org/clivar-panels/omdp>

- Repository for Evaluating Ocean Simulations (REOS)

<http://www.clivar.org/clivar-panels/omdp/reos>

- Coordinated Ocean-ice Reference Experiments (CORE)

<http://www.clivar.org/omdp/core>

- OMDP promotes collaboration between modelling centres, holds topical international workshops, provides modelling expertise across the CLIVAR community.

<http://www.clivar.org/>

Coordinated Ocean-ice Reference Experiments (CORE)

- CORE-I
 - Experimental protocol for global ocean/sea-ice models (ideally CMIP models)
 - Repeat seasonal cycle with synoptic forcing (6 hourly) Large and Yeager
 - 500 year experiment
 - Requires surface salinity restoring to avoid large drifts

Ocean Modelling 26 (2009) 1–46



Contents lists available at [ScienceDirect](http://www.sciencedirect.com)

Ocean Modelling

journal homepage: www.elsevier.com/locate/ocemod



Coordinated Ocean-ice Reference Experiments (COREs)

Stephen M. Griffies^{a,*}, Arne Biastoch^b, Claus Böning^b, Frank Bryan^c, Gokhan Danabasoglu^c, Eric P. Chassignet^d, Matthew H. England^e, Rüdiger Gerdes^f, Helmuth Haak^g, Robert W. Hallberg^a, Wilco Hazeleger^h, Johann Jungclaus^g, William G. Large^c, Gurvan Madecⁱ, Anna Pirani^j, Bonita L. Samuels^a, Markus Scheinert^b, Alex Sen Gupta^e, Camiel A. Severijns^h, Harper L. Simmons^k, Anne Marie Treguier^l, Mike Winton^a, Stephen Yeager^c, Jianjun Yin^d

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4 | CCSIMA 2016 | Simon Marsland

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Coordinated Ocean-ice Reference Experiments (CORE)

- CORE-II

- Interannual Variability – 1948-2007 (now 2009)
- 300 year experiment (5x repeat cycle)
- Requires surface salinity restoring to avoid large drifts
- *Ocean Modelling* CORE-II Special Issue (Virtual)

<http://www.sciencedirect.com/science/journal/14635003/vsi/10PSR6J3BV4>

- North Atlantic mean state [Danabasoglu et al. 2014](#)
- Late 20th century sea level change [Griffies et al. 2015](#)
- ACC and Southern Ocean overturning [Farneti et al. 2015](#)
- Southern Ocean water masses and sea ice [Downes et al., 2015](#)
- North Atlantic variability [Danabasoglu et al. 2016](#)
- Arctic sea-ice and solid freshwater [Wang et al., 2016](#)
- Arctic Ocean and liquid freshwater [Wang et al., 2016](#)
- ...more coming ...

Ocean Model Intercomparison Project (OMIP)

- Coupled Model Intercomparison Project (CMIP6)
- Model Intercomparison Projects (MIPs)
- GMDD Discussion paper: Griffies et al., current

<http://www.geosci-model-dev-discuss.net/gmd-2016-77/>

Methods for assessment of models

12 Apr 2016

Experimental and diagnostic protocol for the physical component of the CMIP6 Ocean Model Intercomparison Project (OMIP)

Review status

This discussion paper is under review for the journal Geoscientific Model Development (GMD).

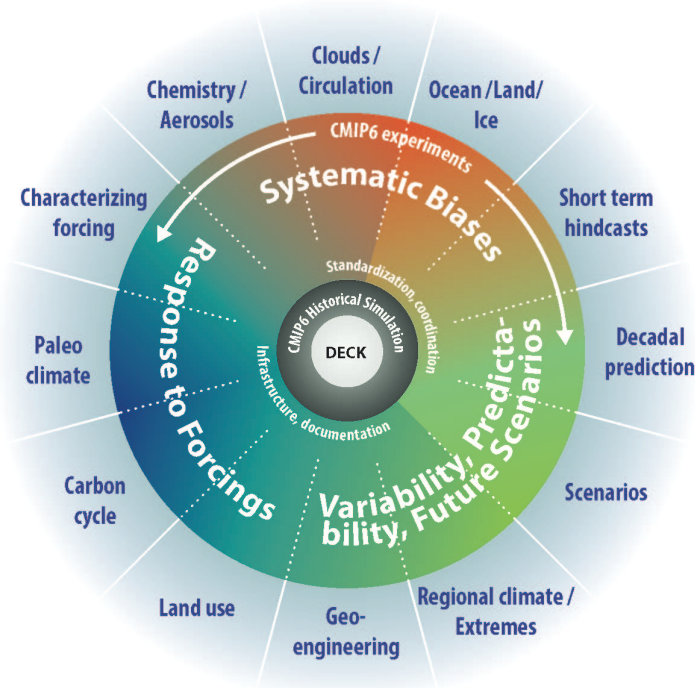
Stephen M. Griffies¹, Gokhan Danabasoglu², Paul J. Durack³, Alistair J. Adcroft¹, V. Balaji¹, Claus W. Böning⁴, Eric P. Chassignet⁵, Enrique Curchitser⁶, Julie Deshayes⁷, Helge Drange⁸, Baylor Fox-Kemper⁹, Peter J. Gleckler³, Jonathan M. Gregory¹⁰, Helmuth Haak¹¹, Robert W. Hallberg¹, Helene T. Hewitt¹², David M. Holland¹³, Tatiana Ilyina¹¹, Johann H. Jungclaus¹¹, Yoshiki Komuro¹⁴, John P. Krasting¹, William G. Large², Simon J. Marsland¹⁵, Simona Masina¹⁶, Trevor J. McDougall¹⁷, A. J. George Nurser¹⁸, James C. Orr¹⁹, Anna Pirani²⁰, Fangli Qiao²¹, Ronald J. Stouffer¹, Karl E. Taylor³, Anne Marie Treguer²², Hiroyuki Tsujino²³, Petteri Uotila²⁴, Maria Valdivieso²⁵, Michael Winton¹, and Stephen G. Yeager²

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GMDD CMIP6 Special Issue

- Coupled Model Intercomparison Project (CMIP6)
- Model Intercomparison Projects (MIPs)

http://www.geosci-model-dev.net/special_issue590.html



	Long Name of MIP (Short Name of MIP)
1	Aerosols and Chemistry Model Intercomparison Project (AerChemMIP)
2	Coupled Climate Carbon Cycle Model Intercomparison Project (C ⁴ MIP)
3	Cloud Feedback Model Intercomparison Project (CFMIP)
4	Detection and Attribution Model Intercomparison Project (DAMIP)
5	Decadal Climate Prediction Project (DCPP)
6	Flux-Anomaly-Forced Model Intercomparison Project (FAFMIP)
7	Geoengineering Model Intercomparison Project (GeoMIP)
8	Global Monsoons Model Intercomparison Project (GMMIP)
9	High Resolution Model Intercomparison Project (HighResMIP)
10	Ice Sheet Model Intercomparison Project for CMIP6 (ISMIP6)
11	Land Surface, Snow and Soil Moisture MIP (LS3MIP)
12	Land-Use Model Intercomparison Project (LUMIP)
13	Ocean Model Intercomparison Project (OMIP)
14	Paleoclimate Modelling Intercomparison Project (PMIP)
15	Radiative Forcing Model Intercomparison Project (RFMIP)
16	Scenario Model Intercomparison Project (ScenarioMIP)
17	Volcanic Forcings Model Intercomparison Project (VolMIP)
18	Coordinated Regional Climate Downscaling Experiment (CORDEX)
19	Dynamics and Variability of the Stratosphere-Troposphere System (DynVar)
20	Sea-Ice Model Intercomparison Project (SIMIP)
21	Vulnerability, Impacts & Adaptation and Climate Services AB (VIACS AB)

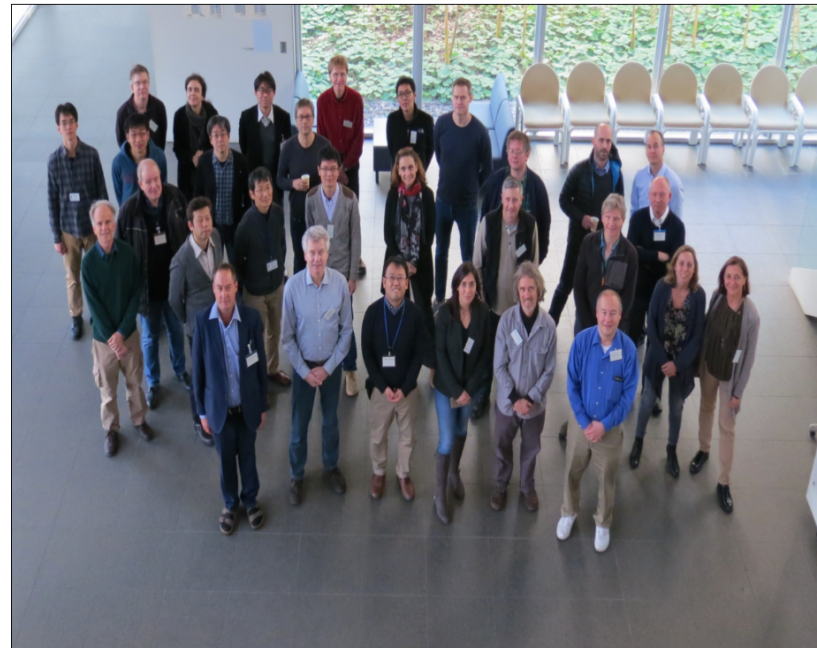
JRA-55

- OMDP mini workshop on forcing ocean and sea-ice models
 - Grenoble, France, 29-30 January 2015
 - WCRP Report No. 9/2015; CLIVAR Report No. 202

http://www.clivar.org/sites/default/files/documents/OMDP_Grenoble_report.pdf
- CORE, DRAKKER, JRA-55
- JRA-55 based surface atmospheric data set for driving ocean/sea-ice models
- Still needs corrects like CORE (NCEP) and DRAKKER (ERA)
- Various groups committed to testing JRA-55 over 2015
- Why JRA-55 (Go-Go)
 - 1958-2012 reanalysis (55 years) (4DVAR)
 - +2013-present (extended and ongoing)
 - Previous was JRA-NeGo (25 years)
 - 1979-2014.1 (JCDAS) (3DVAR)

2nd Session of OMDP - 'Extended' Meeting on Forcing Ocean-Ice Climate Models

- JAMSTEC, Yokohama, Japan, 14-15 January, 2016
- Presentations available at workshop website
<http://www.clivar.org/omdp/japan2016>



JRA-55 Evolution



JRA-55

- **0.0** JRA-55
 - **0.1** unadjusted but vertically shifted forcing (match CORE bulk formulae)
 - **0.2** adjusted shortwave/longwave radiative fluxes (buoy comparisons)
 - **0.3** further height adjustment for LY09 bulk formulae and (CERES Mar 2000-Feb 2015)
 - Longwave biases against CERES small – no adj.
 - Shortwave biases large so large adj.
 - **0.4** low temp. cutoff around Antarctica
-
- All adjustment factors are climatological/seasonal. Not interannual.
 - An ongoing process ...

JRA-55 Advantages



JRA-55

- Built on NWP system so near real-time
 - JMA data server is 2 days ago (but server slow)
 - Corrected data of course less often
 - Supports applications around near-current climate events
- Strong commitment from JAMSTEC and above for dedicated ongoing funding support
- Higher resolution (~55 km, TL319) better for $\frac{1}{4}$ and $\frac{1}{10}$ degree applications
- So adopted for CMIP6/OMIP as a stage 2 effort (post-CORE)
- Higher temporal resolution (3 hr)

ACCESS PLANS

- Participation in OMIP (initially CORE) and FAFMIP
- Comparison of CORE-II and JRA-55
- Focus on Ocean Heat Content and Sea Level Rise
 - PhD Project – Fabio Dias
 - ARC Discovery Project – Catia Domingues, Will Hobbs

ACCESS JRA-55 STATUS

- Some technical issues with modifying ACCESS for new forcing to be resolved
 - Handling higher resolution
 - Redistribution of runoff
 - ...